

ATTACHMENT 13

F/A 260

GRACE

Construction Products Division

0223/171

September 30, 1980

TO: C. E. Burt
R. J. Bortacchi

FROM: J. R. Wilson

SUBJ: CPSC/Tremolite Status Report

This memo will summarize the background, current status, and future scheduled plans of our tremolite reduction program for Attic Insulation. The information contained in this report is a consolidation of information from Fred Eaton, Julie Yang, Dave Walczyk and Mario Favorito.

BACKGROUND

Prior to 1968, little was known about the health hazards associated with asbestos fibers. The Zenolite Company was aware of the tramp mineral, tremolite, in its Libby, Montana Vermiculite deposit and investigated the feasibility of separating and concentrating tremolite as a saleable product. In the late 1960's, the Libby Mine and Mill sampled the work place environment by the Impinger Method for total dust, as this was the acceptable method of sampling for employee exposure to dust including asbestos. The ACGIH had established threshold limit values (TLV) of 20 MPPCF for total nuisance dust and 5 MPPCF for asbestos dust. Typically, 50% of the personnel samples at Libby exceeded the 5 MPPCF TLV.

In 1968, the U.S. Public Health Service and later Johns-Manville Company adopted the recently developed Membrane Filter Method of sampling and Phase Contrast Microscopy Method of analysis. In 1969, CPD adopted the Membrane Filter Method and received training from Johns-Manville. At that time there were no fiber TLV's established, but it appeared that the U.S. Public Health Service would establish 12 f/cc as the TWA for asbestos fibers. Johns-Manville and CPD targeted for 6 f/cc. Although

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OSHA Standards were promulgated in 1972 and asbestos TWA limits were 5 f/cc. Very little was done by CPD until the standards were lowered to 2 f/cc TWA-10 f/cc ceiling in 1976.

In the period 1976-1978 CPD's main fiber exposure reduction efforts centered around CPD's employees at the mine, mill and expanding plants. During this period, new plants were built including the Libby Mill and existing facilities upgraded. From CPD's vermiculite product standpoint, little effort was placed on fiber reduction except in the area of Monokote. To comply with the National Emission Standards for Hazardous Air Pollutants (NESHAPS), commercial asbestos was removed from the Monokote formulation and the product complies with the 1% asbestos limitation.

In 1976 CPD assigned Fred Eaton to coordinate fiber reduction activities including liaison with trade associations and regulatory agencies. In order to determine what user exposure to tremolite fibers were when handling Libby and South Carolina expanded vermiculite, CPD conducted extensive product air sampling during the first quarter 1977. In general, these results were favorable and CPD was able to make the statement that "in normal use, none of our products exceed the present allowance level (as defined by OSHA) for fibrous tremolite and most are well below OSHA limits".

ATTIC INSULATION

In the second quarter of 1977, emphasis was placed on reducing fiber exposure to the lowest possible level in all consumer products. Chip Wood established fiber exposure targets of 1.0 f/cc TWA and 5 f/cc ceiling by 1/1/78 and .5 f/cc TWA and 5 f/cc ceiling by 1/1/79 and a long range target of .2 f/cc TWA and 1 f/cc ceiling. With these targets, a concentrated effort was placed on Attic Insulation. The Weedsport, New York expanding plant was selected as the test site. In order to determine results of process changes or modifications, a simulated attic was constructed over the Weedsport office. Simulated attic tests indicated that Libby #1 and #2 screened over a 14 mesh screen and all cyclone fines removed, could achieve the target TWA exposure of .5 f/cc and 5 f/cc ceiling. Because of the need to supply Libby #3 attic (1977 was a peak demand year) simulated attic tests were conducted to see if screening and pulling the fines would result in the same low values that were determined on Libby #1 and #2. Unfortunately, screened #3 TWA and ceiling results were just under the OSHA standards, but exceeded CPD's target of 1 f/cc and 5 f/cc for 1/1/78.

Prior to removing cyclone fines and screening product to remove heavy particles, extensive test work had been conducted on binding expanded vermiculite. Although numerous binder additives were evaluated (oil emulsion, lignin, sodium silicate, potassium silicate, starch and CMC) it was felt that the moisture primarily suppressed the dust and fiber.

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The main objective of bound Attic Insulation test product shipments (approximately 15% of total sales) of market acceptance when bound with 0.75 gmc at 0.40 f/cc. In order to meet Attic insulation demand in 1977, 15% bound with 0.57 gmc at 0.20 f/cc. This bound product was acceptable in the marketplace and simulated attic fiber exposure. Test results met the target goal of 0.5 f/cc TWA and 5 f/cc CMM.

FIBER ANALYSIS TEST METHODS

Until 1977, a controlled drop test procedure was used to determine fiber released exposure. Approximately 150 drop tests were conducted using the test facility shown in the attached photographs. In 1977, it was determined that the drop test data could be used as an indication of brood wings, but had little correlation to user exposure. For this reason, the drop test procedure was discontinued and a simulated attic test procedure was developed. This switch in test procedure essentially eliminated all prior exposure data.

The simulated attic test at Weedsport has been used extensively since 1977. Despite the extensive testing, little data has been produced which gives us a clear understanding of the range of fiber liberation in unbound and bound attic. From my analysis of the test data, much of the results must be discounted because the tests were not run on production type material. For example, we have data on concentrate which was at the end of the silo (this material contained an unusually high rock content), we also have data on "super clean" concentrate which is not reproducible in our current mining operations.

Discounting all of the non-standard test data, the following chart will give you an indication of the levels of exposure that take place with unscreened/unbound, screened/unbound and screened/bound attic material.

ACTUAL ATTIC TESTS

In addition to the simulated attic tests, we have run four actual attic tests with bound L-1 attic material. The results shown below do not correlate with our simulated attic tests.

Actual Attic Tests Bound L-1 Attic

Type Home	Exposure (f/cc)	
	AVC	TWA (2/8)
Colonial	2.597	0.649
Cape	0.971	0.243
Ranch	2.115	0.529
Colonial	1.746	0.436

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WALCZYK TEST MATERIAL
Simulated Agate Pebbles
8866-2

Product Configuration	Date Tested	No. Tests	AVERAGE		Notes
			WALCZYK ANALYST	WALCZYK	
Unscreened/unbound	5/77	3	1.91	1.228	
Screened/unbound	5/77				
	8/77	11	1.73	0.183	
Screened/unbound	9/79				
	11/79	5	.78	0.20	Eaton notes that this lower result may have come from cleaner concentrate shipments in 1977.
Screened/bound .28 OTS/CF	9/79				
	11/79	5	.56	0.141	All test material produced from same can of concentrate.
Screened/bound .28 OTS/CF	9/80	1	0.35	.087	Walczyk test materi. (more data necessary)

Other results not directly related to above:

Screened/unbound	6/77	3	3.44	0.86	End of silo.
Screened/unbound	3/78	3	0.73	0.183	Super clean concentr
Screened/bound .42 OTS/CF	77	2	2.513	.628	
Screened/bound .67 OTS/CF	77	2	1.758	0.439	
Screened/bound .98 OTS/CF	77	2	1.175	0.294	

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Enter 12 in the heading of each article indicating the location of the article. Approximate value of the value of the article. To cite the reasons for this difference in value.

a. Simulated article is similar to year 1900 home with built-in attic.

b. All actual articles were modern ranch type with built-in heat room. Installation of the appendix by person on the ground or bent over position.

c. To place insulation in cave area, material had to be pushed generating dust.

d. Most actual articles were not difficult to reach and worker attitude was get in - do the job - and get out.

The TWA values are based on a person spreading vermiculite. Attic insulation only two hours in any eight hour day.

CPSC

All of our tremolite reduction activities have been aimed at complying with the CPSC, but as yet the CPSC has not banned all asbestos related products or set any criteria for compliance.

In October of 1979, the commission published in the Federal Register an advanced notice of proposed rulemaking concerning products containing asbestos. This notice requested manufacturers of products containing asbestos to notify the commission of these products and a description of their efforts to reduce asbestos contamination. A copy of our notification is attached.

In our February 14th notification to the CPSC we addressed the issue of naturally occurring inadvertent asbestos in vermiculite, reviewed the uses of vermiculite, formally opposed the CPSC's regulatory approach and recommended a modified generic approach to regulation.

On March 12, 1980, Grace, CPSC and our Washington Counsel held a conference call. The minutes of this call are attached.

During the call we learned that vermiculite was not a high priority at CPSC, and that there are mixed opinions at the commission regarding how they will treat products like vermiculite.

At this time, all is quiet at CPSC. I do not think there will be any activity out of CPSC for the next 6 - 12 months.

CURRENT REDUCTION ACTIVITIES

GPO is currently exploring two areas which may reduce tremolite in their insulation.

The first is a re-screening circuit which is being installed at the Libby Mill. This additional screening process reduces the rock content in coarse grade concentrates. The primary justification for this circuit is the freight savings which will be realized by shipping lower concentrates. Because of the correlation between rock content and tremolite content, it was hoped that this circuit would reduce tremolite exposure. Although not final, the preliminary results show little decrease in fiber liberation at the end user level.

The second area of improvement is in the area of better distribution of binder on the expanded particles. Dave Walczyk is leading this project. Partial fiber results were presented in the earlier simulated attic table. Although not complete, I am optimistic that this project will show reduced fiber liberation at the user level.

CONCLUSIONS

The tremolite reduction project is receiving attention from Eaton, Walczyk, Favorito, Yang and myself. Our direction of continuing to explore reduction techniques is good. I would recommend we generate more end-user data on typical production run material. This additional data will allow us to draw better conclusions regarding our reduction activities.

Joel

J. H. Wilson

JHW:mg

Attachments

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